IN THE CLAIMS

Claims 1, 20, and 40 are amended herein. New claims 41-44 are added. All pending claims are reproduced below.

1. (Currently Amended) A method implemented by a data processing system for classifying a plurality of received images, comprising:

extracting features from a training set that is a user-chosen subset of the plurality of images, each image in the training set having an associated class;

classifying, by the data processing system, at least one of the plurality of images in accordance with the extracted features and classes of the training set, the classifier grouping the plurality of images before receiving feedback from a human being;

allowing a user to classify ones of the plurality of images; and

displaying the results of a comparison between the classification by the data processing system and the classification by the user.

2. (original) The method of claim 1, wherein the features of the training set include size.

3. (original) The method of claim 1, wherein the features of the training set include brightness.

4. (original) The method of claim 1, wherein the features of the training set include color.

5. (original) The method of claim 1, wherein the features of the training set include shape.

6. (original) The method of claim 1, wherein the features of the training set consist at least one of: texture, moment of inertia, context, proximity to wafer features,

proximity to other defects, connectivity to adjacent features, connectivity to other defects, and yield relevant properties derived from the image.

7. (original) The method of claim 1, wherein the features of the training set include defect coordinates in wafers.

8. (original) The method of claim 1, wherein the features of the training set include defect coordinates when spatial cluster analysis is used.

9. (original) The method of claim 1, wherein the features of the training set include information derived from one of the processing history, yield, relevance, and origins of defects.

10. (original) The method of claim 1, where classifying, by the data processing system, at least one of the plurality of images in accordance with the extracted features and classes of the training set includes classifying the plurality of images using a Kohonen map technique.

11. (original) The method of claim 10, wherein the Kohonen map is seeded with non-random numbers.

12. (original) The method of claim 1, where classifying, by the data processing system, at least one of the plurality of images in accordance with the extracted features and classes of the training set includes classifying the plurality of images using a spatial signature analysis technique.

13. (original) The method of claim 1, where classifying, by the data processing system, at least one of the plurality of images further includes classifying in accordance with cluster-based features instead of images.

14. (original) The method of claim 1, wherein allowing a user to classify ones of the plurality of images includes displaying the images to the user in classification groups determined by the classifying step.

15. (original) The method of claim 1, further comprising sending feedback to an inspection system to fine-tune the inspection system in accordance with the user's classification.

16. (original) The method of claim 1, further comprising: inspecting an inspection object in real-time and sending the results of the inspection set to a classifier trained in accordance with the plurality of images classified by the user.

17. (original) The method of claim 1, wherein the features include tool history information relating to an inspection system.

18. (original) The method of claim 1, wherein the features include tool history information relating to the past success rate of the classification step.

19. (original) The method of claim 1, wherein only some of the plurality of images relate to an semiconductor etch process.

20. (Currently Amended) A method implemented by a data processing system for classifying a plurality of received images, comprising:

extracting features from a training set that is a user-chosen subset of the plurality of images, each image in the training set having an associated class;

classifying, by the data processing system, at least one of the plurality of images in accordance with the extracted features and classes of the training set, the classifying including grouping the plurality of images before receiving feedback from a human being; and

displaying the results of a comparison between the classification by the data processing system and [[the]] a classification by the user.

21. (Original) A system that classifies a plurality of received images, comprising:

a software portion configured to extract features from a training set that is a user-chosen subset of the plurality of images, each image in the training set having an associated class;

a software portion configured to classify, by the system, at least one of the plurality of images in accordance with the extracted features and classes of the training set;

a software portion configured to allow a user to classify ones of the plurality of images; and

a software portion configured to send feedback to an inspection system to fine-tune the inspection system in accordance with the user's classification.

22. (original) The system of claim 21, wherein the features of the training set include size(original).

23. (original) The system of claim 21, wherein the features of the training set include brightness.

24. (original) The system of claim 21, wherein the features of the training set include color.

25. (original) The system of claim 21, wherein the features of the training set include shape.

26. (original) The system of claim 21, wherein the features of the training set consist at least one of: texture, moment of inertia, context, proximity to wafer features, proximity to other defects, connectivity to adjacent features, connectivity to other defects, and yield relevant properties derived from the image.

27. (original) The system of claim 21, wherein the features of the training set include defect coordinates in wafers.

28. (original) The system of claim 21, wherein the features of the training set include defect coordinates when spatial cluster analysis is used.

29. (original) The system of claim 21, wherein the features of the training set include information derived from one of the processing history, yield, relevance, and origins of defects.

30. (original) The system of claim 21, where the portion configured to classify at least one of the plurality of images in accordance with the extracted features and classes of the training set includes a portion configured to classify the plurality of images using a Kohonen map technique.

31. (original) The system of claim 30, wherein the Kohonen map is seeded with non-random numbers.

32. (original) The system of claim 21, where the portion configured to classify at least one of the plurality of images in accordance with the extracted features and classes of the training set includes a portion configured to classify the plurality of images using a spatial signature analysis technique.

33. (original) The system of claim 21, where the portion configured to classify at least one of the plurality of images further includes a portion configured to classify in accordance with cluster based features instead of images.

34. (original) The system of claim 21, wherein the portion configured to allow a user to classify ones of the plurality of images includes a portion configured to display the images to the user in classification groups determined by the classifying step.

35. (original) The system of claim 21, further comprising a portion configured to send feedback to an inspection system to fine tune the inspection system in accordance with the user's classification.

36. (original) The system of claim 21, further comprising: a portion configured to inspect an inspection object in real-time and to send the results of the inspection set to a classifier trained in accordance with the plurality of images classified by the user.

37. (original) The system of claim 21, wherein the features include tool history information relating to an inspection system.

38. (original) The system of claim 21, wherein the features include tool history information relating to the past success rate of the classification step.

39. (original) The system of claim 21, wherein only some of the plurality of images relate to a semiconductor etch process.

40. (Currently Amended) A system that classifies a plurality of received images, comprising:

a portion configured to extract features from a training set that is a user-chosen subset of the plurality of images, each image in the training set having an associated class;

a portion configured to classify, by the system, at least one of the plurality of images in accordance with the extracted features and classes of the training set, the classifier grouping the plurality of images before receiving feedback from a human being;

a portion configured to send feedback to an inspection system to fine tune the inspection system in accordance with the classification performed by the data processing system.

41. (New) The method of claim 1, wherein the plurality of images are images captured during a semiconductor manufacturing process.

42. (New) The method of claim 20, wherein the plurality of images are images captured during a semiconductor manufacturing process.

43. (New) The system of claim 21, wherein the plurality of images are images captured during a semiconductor manufacturing process.

44. (New) The system of claim 40, wherein the plurality of images are images captured during a semiconductor manufacturing process.